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BLACKLEG.

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Synonyms.—Blackleg is also known as Symptomatic Anthrax, Emphysematous Anthrax, Quarter Ill, Black Quarter, and Rauschbrand.

Animals Affected.—For all practical purposes the disease may be considered as merely one of cattle, occurring chiefly among young stock between the ages of three months and four years. Cattle under three months are naturally immune, and for the same reason animals over four years but rarely are attacked. It is a matter of common observation that calves in good condition are more liable to attack than poorer ones. Nevertheless, it is not safe to consider that poor condition will confer immunity against blackleg. The disease is not communicable to man.

Symptoms.—The most important symptom is the occurrence of swellings under the skin on any part of the body except on the legs below the knees or hocks. The swellings when first appearing are painful, but as they become larger the skin in the center of the swelling becomes insensible. The enlargements are, to a large extent, composed of gas bubbles imprisoned in the loose tissues beneath the skin, and the large ones, when pressed, give forth a very characteristic crackling sound. When a swelling is tapped with the finger, it emits a drum-like resonance. When occurring upon the legs, the tumors may cause lameness and even prevent the victim from walking at all. If the tumor is cut open, black or frothy blood runs out. Fever is present and is manifested by the usual indications, such as quickened breathing, dullness, and loss of appetite. Death occurs within a period varying from eight hours to two days after the beginning of the attack.

Changes Observed After Death.—The carcass bloats rapidly and likewise decomposes quickly after death. When swellings are cut open they are found to contain more or less clotted black blood and gas. The

excessive blackening by blood gives rise to the various names, such as black quarter and blackleg. Some internal organs are more or less affected, but the changes in the internal organs need not be considered in recognizing the disease.

Cause.—The disease is brought about by bacteria which live naturally in the soil and which gain access to the body through wounds, and more rarely with food eaten. The germs of blackleg are quite generally distributed, but certain soils have been observed to offer particularly favorable conditions for their existence, and in consequence are especially dangerous for stock pastured thereon. Among these are damp or waterlogged soils, or heavy clay soils. Punctured wounds, such as those produced by barbed wire, briars, stubble, etc., are regarded as fruitful sources of infection. A diseased animal is not regarded as a direct source of danger to other animals in contact with it. If the swellings have been cut open and blood is discharged, there is more danger.

Disposal of the Dead.—Burning is preferable to any other method of disposal, as it is the only means that can be relied upon to absolutely destroy all germs of the disease with which the carcass is teeming. When the victim is buried the germs will remain alive in the soil long after the carcass has decomposed, and will constitute a menace to the health of stock pastured upon the land. Earthworms are said to convey infection to the surface.

Treatment Useless.—No successful treatment is known, and even should a remedy be discovered, its usefulness would be limited, owing to the rapidly fatal nature of the affection. Cutting open the swellings and injecting various medicines has seldom met with success. Excessive exercise and bleeding have also been found next to useless.

Prevention by Vaccination.—The method is based upon the principle that an attack of the disease may be warded off by purposely causing the animal to have an exceedingly mild attack by artificial means. Vaccine is prepared by obtaining flesh from a diseased animal, finely dividing it and subjecting it to a high temperature for several hours. This treatment of the diseased material reduces the disease-producing power of the blackleg germs that it contains. The vaccine material, when injected under the hide of a healthy calf, produces little or no visible effect upon the health, but experience shows that this vaccination protects the animal from catching the disease naturally for a year or more. The method was originated in Europe in 1883, and has since been improved upon and used in all districts of the civilized world where stock-raising is carried on extensively. Vaccination as a preventive of blackleg has been and is encouraged by the Bureau of Animal Industry of the United States Department of Agriculture and

the Agricultural Experiment Stations in the various States. Its use has long since passed the uncertain experimental stage.

When Not to Vaccinate.—Calves should not be vaccinated unless it is known that the disease has previously occurred among animals pastured on the same land. When vaccination is practiced there is great risk of introducing the germs of the disease and thus infecting the land, which would necessitate vaccinating annually thereafter. A stock owner can much better afford to ascertain that his range is infected by waiting until a death has occurred, than to rush into vaccinating before he is certain that it is necessary. Blackleg does not sweep over a region rapidly like some infectious diseases. Do not castrate or dehorn at the time of vaccination. Do not vaccinate animals already stricken with the disease.

What Animals to Vaccinate.—Animals between the ages of five months and two years should be vaccinated several weeks before the disease usually appears. Animals older or younger occasionally die of the disease, but it is not profitable to vaccinate against these attacks, for they occur rarely. If animals under six months are vaccinated, the process should be repeated the following year. The operation is facilitated by confining the calves in a chute.

Where Vaccine May Be Obtained.—The Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C., furnishes vaccine free to all applicants. Each stock owner must apply directly to Dr. D. E. Salmon, the Chief of the Bureau of Animal Industry, and an application blank will be mailed to him, upon which the owner shall indicate the amount needed, etc. Under no circumstances will blackleg vaccine be sent to any one person for distribution to others, or for use upon other cattle than his own. For administering the vaccine, a vaccinating outfit must be obtained, costing from \$4 to \$6. The outfit can usually be readily obtained through drug stores. Vaccine prepared by private firms can be purchased from the druggist or directly from the addresses below. Firms preparing vaccine, known to the writer, are: The H. K. Mulford Co., represented by Thomas G. Finley, 41 Stevenson street, San Francisco; The Cutter Analytic Laboratory, Rialto Building, San Francisco; The Pasteur Vaccine Co., represented by Cadogan & McClure, 110 Jessie street, San Francisco; Parke, Davis Co., Detroit, Michigan. The various manufacturers supply vaccinating outfits and furnish plainly worded directions for use.

